REMARKS

Claims 1 to 12 are all the claims pending in the application, prior to the present amendment.

Applicants have added a new independent claim 13. Applicants submit that claim 13 should be examined with claim 1.

The Examiner has attached to the Office Action a copy of the PTO/SB/08 Form filed with the Information Disclosure Statement of July 14, 2006.

The Examiner has initialed and dated this Form to indicate that he has considered and made of record the documents listed on this Form, except for three documents which he has crossed off. At page 2 of the Office Action, the Examiner states that he has crossed off the 1972 article by Whitney et al and the two non-English references.

With respect to the 1972 Whitney et al article, the Examiner states that applicants submitted an incomplete copy of this article. The Examiner does not indicate why he believes that what was submitted was incomplete. Undersigned counsel has checked the "PAIR" system at the U.S. Patent and Trademark Office, and found that a complete copy of the document is in the PAIR system. Accordingly, the USPTO has received a complete copy of the document.

With respect to the two non-English references, these references are JP 49-55629 and the A.B. Letunova et al article. Both of these references were cited in the International Search Report that applicants submitted with the Information Disclosure Statement. The submission of the International Search Report constitutes a concise statement of relevance for these references. Therefore, the Examiner should not have crossed off these references from the Form.

In addition, in the Information Disclosure Statement that applicants submitted, applicants stated that JP 49-55629 corresponds to three listed U.S. patents. These listed U.S. Patents constitute a further concise statement of relevance with respect to this Japanese document. Therefore, the Examiner should not have crossed off the JP reference for this additional reason.

Still further, on October 6, 2006, applicants submitted the Written Opinion of the International Searching Authority, which cites and discusses these references. The Examiner should not have crossed off these references in view of this additional submission.

In view of the above, applicants request the Examiner to consider and make of record each of the documents that he has crossed off.

Claims 1-3 and 7-10 have been objected to as containing informalities.

The Examiner sets forth a detailed statement of these objections beginning at the bottom of page 2 of the Office Action where he raises a number of objections to various terms that appear in the claims.

The Examiner states that one of ordinary skill in the art would understand the meaning of the claims and, therefore, he is not rejecting the claims as being indefinite.

The Examiner states that he is only requiring correction of the claims to remove the informalities.

In general, applicants submit that the objections raised by the Examiner are without merit. The terms that are employed in the claims are conventional terms that have been used in many patents. Applicants see no reason why applicants cannot continue to employ these terms in

the present claims, especially since he Examiner states that one of ordinary skill in the art would understand the meaning of the claims.

With respect to the Examiner's objection to the term "enzyme source" in claims 2, 3, 7 and 9, the Examiner states that the claims do not require the source to contain an enzyme. Again, applicants submit that one of ordinary skill in the art would understand the meaning of the term "enzyme source."

In view of the above, applicants request withdrawal of the objections to the claims.

Claim 1 has been rejected under 35 U.S.C. § 102(b) as anticipated by the 1974 article by Whitney et al.

The Examiner particularly refers to page 277 of the article, which shows that optically active 1,4-pentanediol is produced by the reduction of 5-hydroxy-2-pentanone by chelated lithium compounds.

In response, applicants have amended claim 1 to incorporate the subject matter of claim 2 which has not been subjected to this rejection.

In view of the above, applicants request withdrawal of this rejection.

Applicants have canceled claim 2, and have amended the dependencies of claims 3 and 7 so that they no longer depend from claim 2.

Claims 1 and 10 have been rejected under 35 U.S.C. § 103(a) as obvious over the 1974 article by Whitney et al and the general knowledge of the art.

With respect to claim 1, as noted above, applicants have amended this claim to overcome the anticipation rejection based on Whitney et al. Neither Whitney et al nor the general knowledge of the art disclose or suggest that the compound of formula (1) can be asymmetrically reduced by the action of an enzyme source having the activity of stereoselectively reducing the compound to form an optically active compound represented by formula (2).

Accordingly, applicants submit that claim 1 is patentable over Whitney et al.

With respect to claim 10, the Examiner recognizes that the Whitney et al article does not teach obtaining the compound of formula (1) by an acid hydrolysis of 2-acetyl-gamma-butyrolactone (the Examiner mistakenly refers to 2-hydroxy-gamma-butyrolactone) represented by formula (5) as recited in claim 10.

The Examiner states that 2-hydroxy-gamma-butyrolactone (correctly, 2-acetyl-gamma-butyrolactone) is a known compound that has been available for years, and that applicants' specification teaches (at page 8) that the availability of 2-hydroxy-gamma-butyrolactone (correctly, 2-acetyl-gamma-butyrolactone) is superior "to other sources" which, according to the Examiner, evidences applicants' acknowledgement of the state of the prior art. The Examiner takes Official Notice that it is well known that 2-hydroxy-gamma-butyrolactone (correctly, 2-acetyl-gamma-butyrolactone) has been available for years.

Although the present specification teaches that 2-acetyl-gamma-butyrolactone is easily available, it does not indicate that it can be used to form 5-hydroxy-2-pentanone.

The Examiner states that one of ordinary skill in the art would instantly recognize that an acid hydrolysis of this compound (correctly, 2-acetyl-gamma-butyrolactone), followed by a reduction with LiAlH4, will yield the alcohol of formula (2).

Even if one of ordinary skill in the art would recognize that such a reaction would take place, the Examiner has not provided any reason why one of ordinary skill in the art would employ the 2-acetyl-gamma-butyrolactone as the source of the 5-hydroxy-2-pentanone of formula (1) when reacting it to form the alcohol of formula (2).

The present specification discloses that the use of the 2-acetyl-gamma-butyrolactone of formula (5) avoids the problem that when the compound of formula (1) is stored at a high concentration, the purity thereof may be decreased because of dehydration condensation by itself. The Examiner has not provided any reason why one would select the method set forth in claim 10 to avoid this problem.

Further, claim 10 depends from claim 1 and recites that the compound of formula (1) is asymmetrically reduced by an enzyme source. Whitney et al do not disclose or suggest such a method.

Accordingly, applicants submit that claim 10 is patentable over Whitney et al.

In view of the above, applicants submit that Whitney et al do not disclose or render obvious the subject matter of claims 1 and 10 and, accordingly, request withdrawal of this rejection.

Applicants note that new claim 13 is directed to a method which employs 2-acetyl-gamma-butyrolactone as the source of 5-hydroxy-2-pentanone of formula (1) when

asymmetrically reducing the 5-hydroxy-2-pentanone of formula (1) to optically active 1,4-pentanediol represented by formula (2). As discussed above, Whitney et al do not disclose or suggest employing 2-acetyl-gamma-butyrolactone as the source of 5-hydroxy-2-pentanone when asymmetrically reducing 5-hydroxy-2-pentanone to optically active 1,4-pentanediol represented by formula (2).

Claims 1-3, 7 and 8 have been rejected under 35 U.S.C. § 103(a) as obvious over the 1974 Whitney et al article in view of the 1998 article by Wada et al.

As mentioned above, the recitations of claim 2 have been incorporated into claim 1 and claim 2 has been canceled. Thus, claims 1, 3, 7 and 8 remain as being subject to this rejection.

The Examiner recognizes that Whitney et al do not teach the use of an enzyme from or a composition comprising the enzyme from *Candida magnolia* to perform the stereoreduction. The Examiner argues that the Wada et al article teaches an NADPH dependent carbonyl reductase of *Candida magnolia*, which reduces compounds with a ketone, including many oxobutanoates, pyruvates, diacetyls, ethyl pyruvate, lactones, isatin, and 2,3-pentanediones.

The Examiner argues that one of ordinary skill in the art would conclude from the disclosure of Wada et al that the sole structure required for the stereoselective reduction is the presence of the carbonyl group and, therefore, one of ordinary skill in the art would recognize that the 1,4-pentanediol of Whitney et al could be reduced by *Candida magnolia*.

The Wada et al article disclose in Table III, at page 283, that *C. magnolia* can be used to reduce the various ketones that the Examiner mentions. In footnote "b" of Table 3, Wada et al discloses that a number of compounds could not be reduced with *C. magnolia*, including

pyruvate, 3-oxobutanoate, acetone and menadione. Accordingly, it is clear that the presence of a carbonyl group is insufficient, by itself, to indicate whether or not *C. magnolia* can be employed to reduce a specific ketone.

Since Wada et al do not disclose the reduction of a compound having the structure of 5-hydroxy-2-pentanone, applicants submit that it would not have been obvious to one of ordinary skill in the art that *C. magnolia* could be used to stereospecifically reduce this compound.

In view of the above, applicants submit that Whitney et al and Wada et al do not disclose or suggest the subject matter of claims 1, 3, 7 and 8 and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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